

RESPONSE TO RESTRICTION REQUIREMENT
U.S. Appln. No. 10/049,670

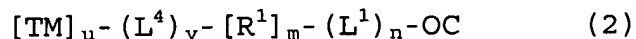
AMENDMENTS TO THE CLAIMS:

This listing of claims will replace all prior versions and listings of claims in the application:

LISTING OF CLAIMS:

Claims 1-54. (Cancelled)

Claim 55. (Previously Presented) A targeted bipolar lipid represented by formula (2):



wherein:

TM is a targeting molecule;

R^1 is a hydrocarbon chain optionally substituted by one or more hydrophilic hydrocarbons each containing at least one atom or group capable of being solvated by water, provided that at least one hydrocarbon chain is substituted by at least one hydrophilic hydrocarbon and each hydrophilic hydrocarbon is attached to the hydrocarbon chain to achieve at least a ten atom spacing along the chain between the hydrophilic hydrocarbon and the group $-(L^1)_n - OC$;

m is an integer of from 1 to 6;

L^1 is a linker atom or group;

n is zero or the integer 1;

OC is an oligocation;

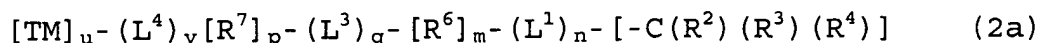
u is an integer 1 or 2;

L^4 is a linker atom or group; and

v is zero or the integer 1.

RESPONSE TO RESTRICTION REQUIREMENT
U.S. Appln. No. 10/049,670

Claim 56. (Previously Presented) The lipid according to Claim 55, wherein said lipid is represented by formula (2a):



wherein:

TM, u, L⁴, v, L¹, m and n are as defined for formula (2);

R⁷ is a hydrophilic hydrocarbon containing at least two atoms or groups capable of being solvated by water;

p is an integer of from 1 to 6;

L³ is a linker atom or group;

q is zero or an integer of from 1 to 6;

R⁶ is a hydrocarbon chain;

R² is a hydrogen atom or an optionally substituted aliphatic, cycloaliphatic, heteroaliphatic, heterocycloaliphatic, aromatic or heteroaromatic group optionally containing one or more cationic centers; and

R³ and R⁴, which may be the same or different, is each an optionally substituted aliphatic, cycloaliphatic, heteroaliphatic, heterocycloaliphatic, aromatic or heteroaromatic group containing one or more cationic centers or R³ and R⁴ together with the carbon atom to which they are attached form a cycloaliphatic, heterocycloaliphatic, aromatic or heteroaromatic group containing two or more cationic centers.

Claim 57. (Previously Presented) The lipid according to Claim 55 or Claim 56, wherein TM is an antibody or an antigen binding fragment or derivative thereof.

Claim 58. (Previously Presented) The lipid according to Claim 55, wherein u is the integer 1.

RESPONSE TO RESTRICTION REQUIREMENT
U.S. Appln. No. 10/049,670

Claim 59. (Previously Presented) The lipid according to Claim 55, wherein:

v is the integer 1; and

L^4 is $-(Alk^1)_r(X^1)_s(Alk^2)_t-$,

wherein X^1 is an -O- atom; a -S- atom; -C(O)-; -C(O)O-; -C(S)-; -S(O); -S(O)₂-; -N(R⁵)-; -CON(R⁵)-; -OC(O)N(R⁵)-; -CSN(R⁵)-; -N(R⁵)CO-; N(R⁵)C(O)O-; -N(R⁵)CS-; -S(O)N(R⁵)-; -S(O)₂N(R⁵)-; -N(R⁵)S(O)-; -N(R⁵)S(O)₂-; -N(R⁵)CON(R⁵)-; or -N(R⁵)SO₂N(R⁵)-,

wherein R⁵ is a hydrogen atom, a straight or branched alkyl group or an -Alk¹X¹- chain;

wherein in any of the groups containing two R⁵ substituents each R⁵ may be the same or different;

wherein Alk¹ and Alk², which may be the same or different, is each an optionally substituted straight or branched C₁₋₁₀alkylene, C₂₋₁₀alkenylene or C₂₋₁₀alkynylene chain optionally interrupted or terminated by at least one carbocyclic or heterocarbocyclic groups and/or heteroatoms or heteroatom containing groups X¹; and

r, s, and t, which may be the same or different, is each zero or the integer 1, provided that when one of r, s or t is zero, at least one of the remainder is the integer 1.

Claim 60. (Previously Presented) The lipid according to Claim 59, wherein L^4 is an -NHCO(Alk²)_t- group.

Claim 61. (Previously Presented) The lipid according to Claim 56, wherein R² is a hydrogen atom; and R³ and R⁴ are each Sp¹[WSp²]_bWSp³ or -Sp¹[WSp²]_bWH, wherein Sp¹, Sp² and Sp³, which may

RESPONSE TO RESTRICTION REQUIREMENT
U.S. Appln. No. 10/049,670

be the same or different, is each a spacer group, W is a cationic center and b is zero or an integer from 1 to 6.

Claim 62. (Previously Presented) The lipid according to Claim 61, wherein Sp^1 , Sp^2 and Sp^3 is each an optionally substituted aliphatic, cycloaliphatic, heteroaliphatic, heterocycloaliphatic, aromatic or heteroaromatic group.

Claim 63. (Previously Presented) The lipid according to Claim 62, wherein Sp^1 , Sp^2 and Sp^3 is each an optionally substituted C_{1-6} alkylene chain.

Claim 64. (Previously Presented) The lipid according to Claim 61, wherein W is a -NH- group.

Claim 65. (Previously Presented) The lipid according to Claim 61, wherein b is an integer of from 1 to 3.

Claim 66. (Previously Presented) The lipid according to Claim 56, wherein $-C(R^2)(R^3)(R^4)$ is $-CH[Sp^1NHSp^2NH_2]_2$, $-CH[Sp^1NHSp^2NHSp^2NH_2]_2$ or $-CH[Sp^1NHSp^2NHSp^2NHCH_3]_2$, wherein Sp^1 is $-CH_2-$ and each Sp^2 is $-(CH_2)_3-$ or $-(CH_2)_4-$.

Claim 67. (Previously Presented) The lipid according to Claim 55, wherein n in $-(L^1)_n-$ is the integer 1.

Claim 68. (Previously Presented) The lipid according to Claim 67, wherein L^1 is $-X^1Alk^2-$ or $-[X^1]_2Alk^1X^1Alk^2-$,

wherein X^1 is an -O- atom; a -S- atom; -C(O)-; -C(O)O-; -C(S)-; -S(O); -S(O)₂-; -N(R⁵)-; -CON(R⁵)-; -OC(O)N(R⁵)-; -CSN(R⁵)-; -N(R⁵)CO-; N(R⁵)C(O)O-; -N(R⁵)CS-; -S(O)N(R⁵)-; -S(O)₂N(R⁵)-; -N(R⁵)S(O)-; -N(R⁵)S(O)₂-; -N(R⁵)CON(R⁵)-; or -N(R⁵)SO₂N(R⁵)-;

wherein R⁵ is a hydrogen atom, a straight or branched alkyl group or an $-Alk^1X^1-$ chain,

RESPONSE TO RESTRICTION REQUIREMENT
U.S. Appln. No. 10/049,670

wherein in any of the groups containing two R⁵ substituents each R⁵ may be the same or different;

wherein Alk¹ and Alk², which may be the same or different, is each an optionally substituted straight or branched C₁₋₆alkylene, C₂₋₆alkenylene or C₂₋₆alkynylene chain optionally interrupted or terminated by at least one carbocyclic or heterocarbocyclic groups and/or heteroatoms or heteroatom containing groups X¹.

Claim 69. (Previously Presented) The lipid according to Claim 68, wherein X¹ is a -CONH- group, Alk¹ is a -CH₂-CH₂ chain and Alk² is a -(CH₂)₄- chain, -(CH₂)₅- chain or -(CH₂)₆- chain.

Claim 70. (Previously Presented) The lipid according to Claim 55, wherein m is an integer 1 or 2.

Claim 71. (Previously Presented) The lipid according to Claim 56, wherein R⁶ is an optionally substituted C₁₀₋₆₀aliphatic chain.

Claim 72. (Previously Presented) The lipid according to Claim 71, wherein R⁶ is a linear, optionally substituted C₁₆₋₃₈alkylene chain.

Claim 73. (Previously Presented) The lipid according to Claim 56, wherein q is the integer 1 and p is the integer 1 or 2.

Claim 74. (Previously Presented) The lipid according to Claim 56, wherein L³ is -X¹-, -X¹Alk¹X¹- or [X¹Alk¹]₁X¹Alk²X¹,

wherein X¹ is an -O- atom; a -S- atom; -C(0)-; -C(0)O-; -C(S)-; -S(0); -S(0)₂-; -N(R⁵)-; -CON(R⁵)-; -OC(0)N(R⁵)-; -CSN(R⁵)-; -N(R⁵)CO-; N(R⁵)C(0)O-; -N(R⁵)CS-; -S(0)N(R⁵)-;

RESPONSE TO RESTRICTION REQUIREMENT
U.S. Appln. No. 10/049,670

$-S(O)_2N(R^5)-$; $-N(R^5)S(O)-$; $-N(R^5)S(O)_2-$; $-N(R^5)CON(R^5)-$; or
 $-N(R^5)SO_2N(R^5)-$ group;

wherein R^5 is a hydrogen atom, a straight or branched alkyl group or an $-Alk^1X^1-$ chain;

wherein in any of the groups containing two R^5 substituents each R^5 may be the same or different;

wherein Alk^1 and Alk^2 , which may be the same or different, is each an optionally substituted straight or branched C_{1-6} alkylene, C_{2-6} alkenylene or C_{2-6} alkynylene chain optionally interrupted or terminated by at least one carbocyclic or heterocarbocyclic groups and/or heteroatoms or heteroatom containing groups X^1 .

Claim 75. (Previously Presented) The lipid according to Claim 74, wherein L^3 is a $-NHC(O)-$, $-CONH-$, $-CONH(CH_2)_2NHC(O)-$, or $-[CONH(CH_2)_2-]_2NCO(CH_2)_2CONH$ group.

Claim 76. (Previously Presented) The lipid according to Claim 56, wherein R^7 is a synthetic or naturally occurring polyol or a poly(alkylene oxide) or a derivative thereof.

Claim 77. (Previously Presented) The lipid according to Claim 76, wherein R^7 is a poly(alkylene oxide) or a derivative thereof.

Claim 78. (Previously Presented) The lipid according to Claim 77, wherein R^7 is a poly(ethylene oxide).

Claim 79. (Previously Presented) The lipid according to Claim 59, wherein R^5 is a methyl or ethyl group.

Claim 80. (Previously Presented) The lipid according to Claim 68, wherein R^5 is a methyl or ethyl group.

RESPONSE TO RESTRICTION REQUIREMENT
U.S. Appln. No. 10/049,670

Claim 81. (Previously Presented) The lipid according to Claim 74, wherein R⁵ is a methyl or ethyl group.